AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions and listings of claims in the application. Please cancel claims 2, 8, and 14-58 without prejudice or disclaimer; amend claims 1, 3, 7, and 10; and add new claims 59-61, as follows:

1. (Currently Amended) An optical element capable of transmitting light, comprising:

an optical surface having an optical axis;

diffractive grooves provided on at least a part of the optical surface and each of the diffractive grooves including

a first surface capable of being approximated by a predetermined optical function;

a second surface extending in a direction to cross the first surface and being parallel to the optical axis with an angular error not greater than 1°; and

a third surface not approximated by the predetermined optical function and to connect the first surface and the second surface;

wherein a width of the third surface in the direction perpendicular to the optical axis is 0.5% to 15% of the sum of a width of the first surface in the direction perpendicular to the optical axis and the width of the third surface in the direction perpendicular to the optical axis, and

wherein the predetermined optical function is represented by the following formula:

$$N = INT(Ah^2 + Bh^4 + C),$$

$$X(h,N) = h^2/(r_N(1 + \sqrt{(1 - (1 + K_N)h^2/r_N^2)})) + A4_Nh^4 + A6_Nh^6 + A8_Nh^8 + A10_Nh^{10} + \Delta N,$$

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

where N denotes the number of a ring-shaped zone of each of the diffractive grooves, h denotes a height from the optical axis, X denotes a distance from a tangent plane in the direction of the optical axis, r_N denotes a radius of a curvature of N-th ring-shaped zone, $K_N A4_N$ to $A10_N$ are coefficients of an aspherical surface of the N-th ring-shaped zone, and $\Delta = -\lambda_0/(n - 1)$ denotes an amount of a face shift corresponding to $1\lambda_0$ on the optical axis.

2. (Canceled).

3. (Currently Amended) The optical element of claim 1, wherein the optical element is a coupling lens for use in an optical pickup apparatus used for an information recording ~~and/or~~ or an information reproducing apparatus or both.

4. (Original) The optical element of claim 3, wherein the optical element is an objective lens to converge a parallel light flux parallel to the optical axis.

5. (Original) The optical element of claim 3, wherein the optical element is an objective lens to converge a divergent light flux divergent to the direction of the optical axis.

6. (Original) The optical element of claim 3, wherein the optical element is a collimator.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

7. (Currently Amended) An optical element capable of transmitting light, comprising:

an optical surface having an optical axis;

diffractive grooves provided on at least a part of the optical surface and each of the diffractive grooves including

a first surface capable of being approximated by a predetermined optical function; and

a second surface extending in a direction to cross the first surface;

wherein a surface roughness Rz of the first surface is not larger than 1/10 of a [[using]] wavelength of a light source used with the optical element, and

wherein the predetermined optical function is represented by the following formula:

$$N = INT(Ah^2 + Bh^4 + C),$$

$$X(h,N) = h^2/(r_N(1 + \sqrt{(1 - (1 + K_N)h^2/r_N^2)})) + A4_Nh^4 + A6_Nh^6 + A8_Nh^8 + A10_Nh^{10} + \Delta N,$$

where N denotes the number of a ring-shaped zone of each of the diffractive grooves, h denotes a height from the optical axis, X denotes a distance from a tangent plane in the direction of the optical axis, r_N denotes a radius of a curvature of N-th ring-shaped zone, K_NA4_N to $A10_N$ are coefficients of an aspherical surface of the N-th ring-shaped zone, and $\Delta = -\lambda_0/(n - 1)$ denotes an amount of a face shift corresponding to $1\lambda_0$ on the optical axis.

8. (Canceled).

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

9. (Original) The optical element of claim 7, wherein a second surface is parallel to the optical axis with an angular error not greater than 1°.

10. (Currently Amended) The optical element of claim 7, wherein the optical element is a coupling lens for use in an optical pickup apparatus used for an information recording ~~and/or~~ or an information reproducing apparatus or both.

11. (Original) The optical element of claim 7, wherein the optical element is an objective lens to converge a parallel light flux parallel to the direction of the optical axis.

12. (Original) The optical element of claim 7, wherein the optical element is an objective lens to converge a divergent light flux divergent to the direction of the optical axis.

13. (Original) The optical element of claim 7, wherein the optical element is a collimator lens.

Claims 14-58 (Canceled).

59. (New) The optical element of claim 1, wherein the width of the third surface in the direction perpendicular to the optical axis is 0.5% to 10% of the sum.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

60. (New) The optical element of claim 59, wherein the width of the third surface in the direction perpendicular to the optical axis is 0.5% to 5% of the sum.

61. (New) The optical element of claim 7, wherein the surface roughness Rz of the first surface is not smaller than 1/1000 of the wavelength of the light source.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com